

JEE Main 2024 Chemistry Question Paper Jan 27 Shift 2

1. Which of the following cannot act as an oxidising agent?

- (1) MnO_4^-
 - (2) SO_4^{2-}
 - (3) N_3^-
 - (4) BrO_3^-
-

2. The quantity which changes with temperature is:

- (1) Mole fraction
 - (2) Mass percentage
 - (3) Molarity
 - (4) Molality
-

3. Phenolic group can be identified by a positive:

- (1) Lucas test
 - (2) Carbylamine test
 - (3) Phthalein test
 - (4) Tollen's test
-

4. Find the longest wavelength in the Paschen series in terms of R.

- (1) $144/7R$
 - (2) $123/2R$
 - (3) $170/R$
 - (4) $16/R$
-

5. For a first-order reaction, find the ratio of time for 99.9% completion to its half-life.

- (1) 10
 - (2) 5
 - (3) 20
 - (4) 4
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6. S1: Ce^{4+} is stable because of noble gas configuration.

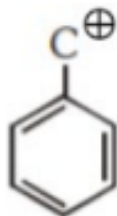
S2: Ce^{4+} is a good reducing agent as it can go to +3 oxidation state.

- (1) Statement I is incorrect but statement II is correct
- (2) Both statement I and II are correct

- (3) Both statement I and II are incorrect
(4) Statement I is correct but statement II is incorrect
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7. Which of the following does NOT undergo SN1 reaction?

- (1) $C = C^{\oplus}$
(2) $2^{\circ} C^{\oplus}$



- (3)
(4) $C = C - C^{\oplus}$
-

8. For C_2H_6 (ethane), find the incorrect statement regarding the Newman projection.

- (1) Infinite conformers
(2) Interconvertible
(3) Dihedral angle in staggered form is 60°
(4) Eclipsed form is more stable
-

9. 1 mole of PbS reacts with x moles of O_3 to give y moles of O_2 . Find $x + y$.

- (1) 8
(2) 9
(3) 4
(4) 6
-

10. Which structure of protein remains intact after coagulation (e.g., boiling egg white)?

- (1) Primary
(2) Secondary
(3) Tertiary
(4) Quaternary
-

11. The molecular formula of the second homologue in the homologous series of monocarboxylic acids is:

- (1) CH_3COOH
(2) CH_3CH_2COOH
(3) $CH_3CH(CH_3)COOH$

(4) $\text{CH}_3\text{CH}_2\text{CH}_2\text{COOH}$

12. The technique used for purification of steam-volatile, water-immiscible substances is:

- (a) Fractional Distillation
 - (b) Distillation under reduced pressure
 - (c) Steam Distillation
 - (d) Simple Distillation
-

13. In which of the following options do all elements have d^{10} configuration in their ground state?

- (a) Cu, Zn, Cd, Ag
 - (b) Cd, Au, Hg, Ni
 - (c) Sc, Ti, Fe, Zn
 - (d) Fe, Cr, Co, Ni
-

14. How many of the following are non-polar molecules?

H_2O , CH_4 , SO_2 , CHCl_3 , PF_3 , NH_3 , SO_2 , HF

15.

- (a) $[\text{Co}(\text{NH}_3)_6]^{3+}$
 - (b) $[\text{PtCl}_6]^{2-}$
 - (c) SF_6
 - (d) BrF_2
- How many of the following have d^2sp^3 hybridisation?

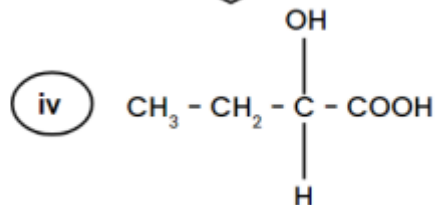
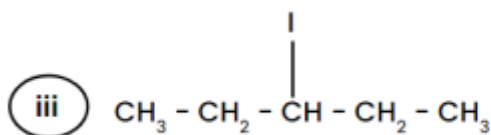
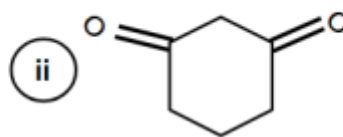
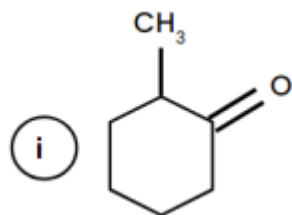
- (a) $[\text{Co}(\text{NH}_3)_6]^{3+}$
 - (b) $[\text{PtCl}_6]^{2-}$
 - (c) SF_6
 - (d) BrF_2
-

16. How many of the following have noble gas configuration?

- (a) Fe^{2+}
 - (b) Cs^+
 - (c) Sr^{2+}
 - (d) Pb^{2+}
-

17. In a standard hydrogen electrode, $\text{pH} = 3$. What is the EMF of the electrode in this case?

18. How many compounds among the following contain a chiral carbon?



19. What volume of 3M NaOH solution can be formed using 84 g of NaOH?
